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the animals shows a corresponding change; young lobsters swim with great irregularity until the otocyst is developed, after which they regularly assume the upright position. It is also interesting to observe that immature lobsters newly molted and not allowed to form a new otolith reassume the rolling movements of their earlier stages and continue in these until opportunity is given them to form new otoliths. Thus the results obtained by Prentiss confirm completely the view first advanced by Delage, namely, that the otocyst has as its chief function that of originating orientation reflexes. That it is not an organ of hearing cannot with so much certainty be maintained, although its importance in this respect has assuredly been shown to be very slight.

P.

Recent Work on Anopheles. — In a recent study on the geographical distribution of *Anopheles* in relation to the former distribution of ague in England, G. H. F. Nuttall records with L. Cobbett and G. Strangeways (*Journal of Hygiene*, Vol. I, January, 1901) a series of observations of general interest in addition to much that is purely medical. He finds that three species, *Anopheles maculipennis*, *A. bifurcatus*, and *A. nigripes*, occur in Great Britain in all districts formerly malarious, but extend into regions in which no ague is known to have been prevalent at any time. To-day *Anopheles* is most numerous in low-lying land containing stagnant or slow-flowing water and corresponding to the districts where ague was formerly prevalent. As the disappearance of this disease does not depend upon the extinction of *Anopheles*, possible causes, therefore, are: (a) a reduction in the number of these insects consequent upon drainage of the land; (b) a reduction of the population in infected districts by emigration; (c) the use of quinine; or (d) the extinction of another yet unknown intermediary host besides man capable of harboring the parasite. The coincidence of the geographical distribution of ague and *Anopheles* is certainly not as precise as claimed by Grassi, and probably the *numerical* distribution will prove of equal importance. The presence of *Anopheles* in non-malarious districts explains the occasional occurrence of ague if a malarious subject comes in from other parts.

In another paper on the structure and biology of *Anopheles*, Nuttall and Shipley (*Journal of Hygiene*, Vol. I, January, 1901) give a full summary of our knowledge, together with personal observations. Noteworthy is the fact that the larva of *Anopheles*, as also that of *Dixa*, browse upon matter adhering to the surface film, like

certain fresh-water snails and many Turbellaria. Palmate hairs on the third to the seventh abdominal segments, with branches in the form of a cup, constitute the means by which the larva cling to the surface film. The studies are to be continued, and from their precise and detailed character bid fair to become a most valuable source of information regarding the genus.

H. B. W.

The Insect Book. — The complete title¹ indicates the effort of the author and of the publishers. The former is widely known for many valuable monographs, both systematic and biological, and for energetic and successful practical work; the publishers are equally well known for their enterprise in numerous undertakings tending towards the promotion of nature study. Such a combination should, it would seem, be eminently satisfactory. That it is not so is disappointing; that the title should be modified is evident. The *Insect Book* should not exclude the groups to which the "majority of collectors of insects confine their attention"; moreover, the standard must be low that considers the life histories "full"; the tables are confined to families or higher groups, and the bibliography, pp. 405–416, copied with but few additions from Banks's List (*Bulletin 24*, Division of Entomology, U. S. Department of Agriculture, 1900), however useful from a taxonomic standpoint, is not of primary importance in a book planned "to encourage the study of life histories of insects"; moreover, the very evident deficiencies of Banks's work are unnoticed and the mistakes not only are uncorrected but are augmented.

The text is readable, though not altogether well balanced in proportion; it shows evidence of haste, of a lack of continuity, and also of the most important essentials for a popular book, namely accuracy and conciseness. Dr. Howard evidently does not believe that all praise should be left for the tombstones, but his extravagant words for several contemporary authors can but jar many of his readers.

Some of the errors of statement are amusing, others are serious: under the former may be placed the classification (p. 295) of the book under review as one of the "older books" relating to insects;

¹ *The Insect Book*. A popular account of the bees, wasps, ants, grasshoppers, flies, and other North American insects, exclusive of the butterflies and moths and beetles, with full life histories, tables, and bibliographies. By Leland O. Howard, Ph.D., Chief of the Division of Entomology, U. S. Department of Agriculture. New York, Doubleday, Page & Co., 1901. xxvii + 429 pp., 47 pls., 265 text illustrations.